

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737



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AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning at page 1, line 6, with the following rewritten paragraph:

C1
[The present invention relates to a decorative item (including parts) and a process for producing the same. More particularly, the present invention primarily relates to a decorative item, such as an exterior part of a timepiece, in which use is made of a basis base material having a hardened layer, for example, a carburized (cemented) layer extending from a surface thereof to an arbitrary depth wherein a solute atom is diffused so as to form a solid solution, and relates to a process for producing the decorative item. Further, the present invention is concerned with an exterior part of a timepiece constituted by a carburized stainless steel, especially an exterior part of a timepiece, such as a wristwatch band, bezel, casing, back lid or dial, constituted by a gas carburized austenitic stainless steel, and is concerned with a process for producing the same. Still further, the present invention is concerned with an exterior part of a timepiece having a smooth or specular surface free of what is known as "orange peel" and with a process for producing the same.]

Please replace the paragraph beginning at page 2, line 3, with the following rewritten paragraph:

C2
[In a decorative item, for example, an exterior part (member) of a timepiece, such as a wristwatch band, bezel, casing, back lid, buckle or dial, use is made of stainless steel, titanium or a titanium alloy. In particular, austenitic stainless steel which is excellent in corrosion resistance and ornamental capacity is widely employed as the stainless steel.]

Please replace the paragraph beginning at page 2, line 16, with the following rewritten paragraph:

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

(13) - However, the austenitic stainless steel has a drawback in that its specular surface is easily scratched to cause the appearance of the wristwatch band, bezel, casing, back lid, dial or other exterior part of a timepiece constituted by the austenitic stainless steel per se to easily deteriorate. -

Please replace the paragraph beginning at page 5, line 4, with the following rewritten paragraph:

(14) - In the thus-obtained decorative item, for example, a wristwatch band, a hardened layer, i.e., carburized layer extending from a surface of austenitic stainless steel as a basis base material to a depth of 5 to 50 μm is formed while maintaining the corrosion resistance thereof. Therefore, not only does the basis base material exhibit a beautiful specular surface but also the specular surface has a Vickers hardness (HV) as high as 500 to 700, which cannot be attained by stainless steel provided with no surface hardening treatment. -

Please replace the paragraph beginning at page 5, line 19, with the following rewritten paragraph:

(15) - However, even if the decorative item whose basis base material is constituted by the above stainless steel having its surface hardened sometimes suffers from scratching when a sharp intense external force is applied thereto. -

Please replace the paragraph beginning at page 5, line 24, with the following rewritten paragraph:

(16) - Therefore, there is a demand for the development of a decorative item whose basis base material is constituted by stainless steel having a higher surface hardness, i.e., greater scratch resistance than that of the conventional decorative item, and also for the development of a process for producing such a decorative item. -

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

Please replace the paragraph beginning at page 6, line 14, with the following rewritten paragraph:

(C7)
However, the gold alloy coating is soft and easily scratched. Accordingly, even if the hardened basis base material surface of a personal ornament is covered with the soft gold alloy coating, the gold alloy coating would be scratched ~~to spoil the, spoiling its~~ beauty as a decorative item. This personal ornament has a drawback in that the above advantage of hardening of basis the base material surface cannot be utilized. -

Please replace the paragraph beginning at page 7, line 16, with the following rewritten paragraph:

(C8)
However, with respect to the exterior part of a timepiece constituted by stainless steel which has been gas carburized at low temperature as mentioned above, completely removing the mill scale formed on the surface thereof so as to render the exterior part of the surface specular cannot be accomplished only by performing mechanical polishing such as barrel polishing or buffing. The reason is that most timepiece exterior parts have a complex configuration because of the attainment of ornamental beauty with the result that there are places which cannot be polished, such as the inside wall of holes and inside the wall and bottom of recessed portions. Further, with respect to timepiece exterior parts comprising a plurality of parts connected to each other, it is difficult to polish part interfaces. For example, with respect to a wristwatch band comprising a multiplicity of band pieces connected to each other by means of connecting parts, the smaller the interstice of mutually neighboring band pieces, the more difficult the polishing thereof. -

Please replace the paragraph beginning at page 9, line 10, with the following rewritten paragraph:

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

Therefore, there is a demand for the development of an exterior part of a timepiece constituted by stainless steel such as austenitic stainless steel which is excellent in scratch resistance and has a specular surface without detriment to the inherent excellent corrosion resistance of stainless steel; the development of an exterior part of the timepiece constituted by stainless steel such as austenitic stainless steel which is excellent in scratch resistance and has its surface provided with mechanical finishing such as hairline finishing or honing without detriment to the inherent excellent corrosion resistance of stainless steel; and the development of a process for producing such timepiece exterior parts.

Please replace the paragraph beginning at page 10, line 6, with the following rewritten paragraph:

The reason is that, by the gas carburization, a greater amount of carbon is diffused within the metal crystal grains of the stainless steel surface than in the metal crystal grain boundaries. That is, when carbon is penetrated in penetrates the metal crystal grains, the metal crystal grains become bulky and swell outward with the result that a thickness difference occurs between the crystal grains and the crystal grain boundaries. When viewed from the surface of the stainless steel, the crystal grains are higher than the crystal grain boundaries.

Please replace the paragraph beginning at page 11, line 1, with the following rewritten paragraph:

This "orange peel" is a phenomenon which commonly occurs when not only stainless steel but also titanium, a titanium alloy or other metals for use in exterior ornamentation of timepieces are subjected to surface hardening, for example, carburizing at a temperature which is close to the recrystallization temperature of the metal or below. In particular, the orange peel

Application No. 09/831,327
Respnse Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

(11) is a phenomenon which occurs when surface hardening is performed at below a temperature slightly over the recrystallization temperature of the metal. --

Please replace the paragraph beginning at page 11, line 18, with the following rewritten paragraph:

(12) Accordingly, there is a demand for the development of an exterior part of a timepiece with an excellent appearance, constituted by a metal which has a smooth or specular surface free of "orange peel" even if the metal is subjected to surface hardening at a temperature which is close to the recrystallization temperature of the metal or below; and for the development of a process for producing such an exterior part of the timepiece.--

Please replace the paragraph beginning at page 12, line 3, with the following rewritten paragraph:

--It is an object of the present invention to solve the above problems of the prior art and to provide a decorative item comprising a basis base material having a hardened layer, for example, a carburized layer extending from a surface thereof to an arbitrary depth, the basis base material surface having a higher surface hardness, i.e., greater scratch resistance than that of the conventional decorative item, especially an exterior part of a timepiece with such a characteristic.--

Please replace the paragraph beginning at page 12, line 12, with the following rewritten paragraph:

--It is another object of the present invention to provide a decorative item comprising the above basis base material with a hardened layer, the decorative item having a surface furnished with a golden color or other various tones without any lowering of surface

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

(12) hardness, i.e., without detriment to the scratch resistance thereof, especially an exterior part of the timepiece with such a characteristic. --

Please replace the paragraph beginning at page 12, line 23, with the following rewritten paragraph:

(13) --It is further Further objects of the present invention are to provide an exterior part of a timepiece constituted by stainless steel such as austenitic stainless steel which is excellent in scratch resistance and has a specular surface without detriment to the inherent excellent corrosion resistance of stainless steel; to provide an exterior part of a timepiece constituted by stainless steel such as austenitic stainless steel which is excellent in scratch resistance and has its surface provided with mechanical finishing such as hairline finishing or honing without detriment to the inherent excellent corrosion resistance of stainless steel; and to provide a process for producing such timepiece exterior parts.--

Please replace the paragraph beginning at page 13, line 12, with the following rewritten paragraph:

--It is a still a further object of the present invention to provide an exterior part of a timepiece with an excellent appearance, constituted by a metal which has a smooth or specular surface free of "orange peel" even if the metal is subjected to surface hardening at a temperature which is close to the recrystallization temperature of the metal or below; and to provide a process for producing such an exterior part of a timepiece.--

Please replace the paragraph beginning at page 14, line 1, with the following rewritten paragraph:

(14) --a basis base material having a hardened layer extending from a surface thereof to an arbitrary depth wherein a solute atom is diffused so as to form a solid solution; and--

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

C14 Please replace the paragraph beginning at page 14, line 5, with the following rewritten paragraph:

--at least one hard coating disposed on a surface of the hardened layer of the basis base material.

C15 Please replace the paragraph beginning at page 14, line 10, with the following rewritten paragraph:

--The basis base material is preferably constituted of stainless steel, titanium or a titanium alloy.--

Please replace the paragraph beginning at page 14, line 12, with the following rewritten paragraph:

--The hard coating and the basis base material at its surface may exhibit respective tones which are different from each other.--

Please replace the paragraph beginning at page 14, line 15, with the following rewritten paragraph:

--The hard coating preferably has a surface hardness greater than that of the basis base material.

Please replace the paragraph beginning at page 14, line 22, with the following rewritten paragraph:

C16 --An intermediate layer may be disposed between the hard coating of carbon and a surface of the hardened layer of the basis base material.--

Please replace the paragraph beginning at page 15, line 1, with the following rewritten paragraph:

--It is preferred that the intermediate layer comprise a lower layer of Ti or Cr disposed on the hardened layer surface of the basis base material and an upper layer of Si or Ge disposed on a surface of the lower layer.--

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

C16 Please replace the paragraph beginning at page 15, line 6, with the following rewritten paragraph:

--In the decorative item of the present invention, at least two hard coatings may be formed on the hardened layer surface of the basis base material, or at least two hard coatings may be laminated on the hardened layer surface of the basis base material.--

C17 Please replace the paragraph beginning at page 15, line 11, with the following rewritten paragraph:

--Further, in the decorative item of the present invention, the hard coating may be disposed on a portion of the hardened layer surface of the basis base material.

Please replace the paragraph beginning at page 15, line 22, with the following rewritten paragraph:

C17 --The decorative item is, for example, an exterior part of the timepiece.

C18 Please replace the paragraph beginning at page 16, line 4, with the following rewritten paragraph:

--providing a basis base material of stainless steel having a hardened layer extending from a surface thereof to an arbitrary depth wherein a solute atom is diffused so as to form a solid solution; and--

C19 Please replace the paragraph beginning at page 16, line 8, with the following rewritten paragraph:

--forming at least one hard coating on a surface of the hardened layer of the basis base material.--

Please replace the paragraph beginning at page 16, line 13, with the following rewritten paragraph:

C19 --One form of an exterior part of a timepiece according to the present invention comprises a stainless steel having at its surface a carburized layer wherein carbon is diffused

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

C19 therein so as to form a solid solution (namely, the exterior part of the timepiece comprising a basis base material of stainless steel provided at its surface with a carburized layer),--

Please replace the paragraph beginning at page 17, line 5, with the following rewritten paragraph:

--It is preferred that the machine surface have a Vickers hardness (HV) of 500 or more. This exterior part of the timepiece can be produced by machining a surface of an exterior part of the timepiece and thereafter carburizing the machined surface.--

C20 Please replace the paragraph beginning at page 17, line 10, with the following rewritten paragraph:

--One form of a wristwatch band of the present invention comprises a plurality of band pieces of stainless steel connected to each other,--

Please replace the paragraph beginning at page 18, line 3, with the following rewritten paragraph:

C21 --In these wristwatch bands, the band pieces may be connected to each other by means of connecting parts of stainless steel, each of the connecting parts having, at as at least a portion of its surface, a carburized layer wherein carbon is diffused so as to form a solid solution.--

Please replace the paragraph beginning at page 20, line 6, with the following rewritten paragraph:

C22 --The process for producing an exterior part of a timepiece other than a wristwatch band according to the present invention comprises the steps of:--

Please replace the paragraph beginning at page 20, line 23, with the following rewritten paragraph:

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

C23 [An exterior part of a timepiece other than a wristwatch band having machined surfaces can be obtained by machining surfaces of the base material prior to the fluorination.]

Please replace the paragraph beginning at page 21, line 7, with the following rewritten paragraph:

C24 [It is also preferred that the exterior part of the timepiece other than the wristwatch band according to the present invention be one obtained by the above process for producing an exterior part of the timepiece other than the wristwatch band according to the present invention.]

Please replace the paragraph beginning at page 21, line 14, with the following rewritten paragraph:

C25 [A further form of an exterior part of a timepiece according to the present invention comprises a metal,--]

Please replace the paragraph beginning at page 21, line 16, with the following rewritten paragraph:

--this metal having at its surface a deformed layer containing a fibrous structure wherein metal crystal grains are deformed so as to be fibrous, at at least the deformed layer having a hardened layer wherein a solute atom is diffused so as to form a solid solution.--

Please replace the paragraph beginning at page 21, line 21, with the following rewritten paragraph:

--The above deformed layer is generally formed by application of a physical external force to at least the surface of the metal. In the present invention, it is preferred that the deformed layer be formed by application to the metal surface of a physical external force capable of drawing the metal surface substantially unidirectionally.]

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

Please replace the paragraph beginning at page 22, line 12, with the following rewritten paragraph:

C26 --The process for producing an exterior part of a timepiece constituted of stainless steel according to the present invention comprises the steps of:-

Please replace the paragraph beginning at page 23, line 15, with the following rewritten paragraph:

C27 --Alternatively, the stainless steel surface may be subjected to a grinding operation to form not only a face of desired shape but also the deformed layer.

Please replace the paragraph beginning at page 24, line 6, with the following rewritten paragraph:

C28 --The above deformed layer is generally formed in a surface of stainless steel of a base material for a timepiece exterior part produced by forging capable of realizing a high degree of deformation.

Please replace the paragraph beginning at page 26, line 17, with the following rewritten paragraph:

C29 --The decorative item of the present invention comprises a basis base material having a hardened layer wherein a solute atom is diffused so as to form a solid solution; and at least one hard coating disposed on a surface of the hardened layer. Optionally, the decorative item may further comprise a gold alloy coating disposed on a surface of the hard coating.

heading: Please replace the heading on the last line of page 25 with the following rewritten

--Basis Base Material--

Please replace the paragraph beginning at page 27, line 1, with the following rewritten paragraph:

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

C29
--The basis base material for use in the decorative item of the present invention can be, for example, any of stainless steel, titanium metals and titanium alloys.]-

Please replace the paragraph beginning at page 27, line 18, with the following rewritten paragraph:

C30
[In the present invention, a solute atom is diffused in a surface of the above basis base material constituted of a metal or alloy so as to form a solid solution, thereby providing a hardened layer.]-

Please replace the paragraph beginning at page 28, line 9, with the following rewritten paragraph:

C31
[The hardened layer is preferably so formed as to extend from a surface of the basis base material to a depth of 5 to 50 µm.]

Please replace the paragraph beginning at page 28, line 15, with the following rewritten paragraph:

C32
[In the present invention, for example, the formation of a carburized layer as the hardened layer in the basis base material constituted of austenitic stainless steel containing no titanium metals is preferably carried out through the following process.]

Please replace the paragraph beginning at page 28, line 21, with the following rewritten paragraph:

C33
[Before the formation of a carburized layer, it is preferred that the basis base material be fluorinated in a fluorogas atmosphere at 100 to 500°C, especially 150 to 300°C.]

Please replace the paragraph beginning at page 30, line 6, with the following rewritten paragraph:

C34
[The fluorogases such as the above fluorocompound gases and F₂ gas, although they can be used alone, are generally diluted with an inert gas such as nitrogen gas or argon gas]

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

C34
before use. The concentration of fluorogas per se in the diluted gas is generally in the range of 10,000 to 100,000 ppm by volume, preferably 20,000 to 70,000 ppm by volume, and still preferably 30,000 to 50,000 ppm by volume.

Please replace the paragraph beginning at page 30, line 20, with the following rewritten paragraph:

C35
--The fluorination of the present invention is carried out by disposing, for example, a basis base material wrought into a given shape in a fluorogas atmosphere of the above concentration at 100 to 500°C. The period of fluorination, although varied depending on the type and size of fluorinated material, etc., is generally in the range of ten-odd minutes to some hours.--

Please replace the paragraph beginning at page 31, line 3, with the following rewritten paragraph:

--This fluorination leads to formation of a fluorinated coating highly permeable for carbon atoms on the surface of the basis base material. Accordingly, the subsequent gas carburization as hardening operation causes carbon atoms to penetrate and diffuse from the surface of stainless steel to the internal part thereof, so that a carburized hardened layer can be formed easily.

Please replace the paragraph beginning at page 33, line 1, with the following rewritten paragraph:

C36
After the above gas carburization, the basis material for the decorative item, for example, the base material for the exterior part of the timepiece is pickled. For example, the base material for the exterior part of the timepiece is immersed in an acid solution.

Please replace the paragraph beginning at page 34, line 20, with the following rewritten paragraph:

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

--After the above pickling, the basis material for the decorative item, for example, the base material for the exterior part of the timepiece is rinsed (washed).--

Please replace the paragraph beginning at page 34, line 23, with the following rewritten paragraph:

--By virtue of this rinsing, not only is any mill scale being peeled from the base material for the exterior part of the timepiece washed away but also the acid solution attaching to the base material for the exterior part of the timepiece is completely washed away so as to stop the advance of the roughening of the carburized hardened layer by the acid solution. Despite the above pickling and rinsing, the mill scale cannot be completely removed from the surface of the base material for the exterior part of the timepiece.--

Please replace the paragraph beginning at page 35, line 9, with the following rewritten paragraph:

--After the rinsing, the surface of the basis material for the decorative item, for example, the base material for the exterior part of the timepiece is subjected to barrel polishing.--

Please replace the paragraph beginning at page 35, line 13, with the following rewritten paragraph:

--For example, the base material for the exterior part of the timepiece is set inside a barrel vessel of a barrel polishing machine. Preferably, walnut chips and alumina abrasive as polishing mediums are placed in the barrel vessel. Barrel polishing is carried out for a period of about 10 hr to polish the rough surface formed at the outermost surface of the carburized hardened layer as well as the remaining mill scale.--

Please replace the paragraph beginning at page 35, line 21, with the following rewritten paragraph:

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

(138)
--The mill scale formed on the surface of the base material for the exterior part of the timepiece can be completely removed by the combination of the above pickling, rinsing and barrel polishing. Even if the base material for the exterior part of the timepiece has a complex configuration, the mill scale can be completely removed therefrom. Further, the base material for the exterior part of the timepiece can be polished by the barrel polishing so as to have a specular surface.--

Please replace the paragraph beginning at page 36, line 5, with the following rewritten paragraph:

--When buffing is carried out in place of the barrel polishing, it is extremely difficult to completely remove the mill scale formed on the surface of the base material for the exterior part of the timepiece.--

Please replace the paragraph beginning at page 36, line 9, with the following rewritten paragraph:

--If the surface hardness (HV) of the carburized layer after the barrel polishing is at least 500 as measured under a load of 50 g, it is satisfactory as that of the exterior part of the timepiece and other decorative items. It is preferred that the surface hardness (HV) be at least 600 as measured under a load of 50 g.--

Please replace the paragraph beginning at page 36, line 16, with the following rewritten paragraph:

--In the present invention, after the barrel polishing, the surface of the basis material for the decorative item such as the base material for the exterior part of the timepiece may further be buffed.--

Please replace the paragraph beginning at page 36, line 20, with the following rewritten paragraph:

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

C38 --After the buffing, if the surface hardness (HV) of the carburized layer is at least 500 as measured under a load of 50 g, it is satisfactory as that of the exterior part of the timepiece and other decorative items. It is preferred that the surface hardness (HV) be at least 600 as measured under a load of 50 g. --

Please replace the paragraph beginning at page 37, line 22, with the following rewritten paragraph:

C39 --Further, in the decorative item of the present invention, the hard coating may be disposed on a portion of the hardened layer surface of the basis material. --

C40 Please replace the paragraph beginning at page 38, line 7, with the following rewritten paragraph:

C40 --Specific methods of forming the above hard coating and specific methods of forming the intermediate layer disposed between the hard coating of carbon and the surface of the hardened layer of basis material will be described later with reference to Example A's. --

C41 Please replace the paragraph beginning at page 39, line 1, with the following rewritten paragraph:

C41 --Now, the exterior part of the timepiece according to the present invention and the process for producing the same will be described in detail. --

C42 Please replace the paragraph beginning at page 39, line 4, with the following rewritten paragraph:

C42 --The exterior part of a timepiece according to the present invention can be classified into a wristwatch band as obtained by connecting a plurality of band pieces of stainless steel to each other by means of a plurality of connecting parts of stainless steel and an exterior part of a timepiece other than the wristwatch band. --

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

Please replace the paragraph beginning at page 39, line 16, with the following rewritten paragraph:

C42 The latter exterior part of the timepiece other than the wristwatch band is also carburized, preferably gas carburized, so that a carburized hardened layer is formed at the surface thereof.

Please replace the paragraph beginning at page 44, line 21, with the following rewritten paragraph:

C43 With respect to the surface hardness (HV) of the carburized layer having undergone the above machining, 500 or greater under a load of 50 g is satisfactory as the hardness of the exterior parts of the timepiece. It is preferred that the surface hardness be 600 or greater under a load of 50 g.

Please replace the paragraph beginning at page 45, line 15, with the following rewritten paragraph:

C44 Also, in the exterior parts of the timepiece other than the wristwatch band comprising band pieces connected to each other by means of connecting parts, the base material thereof (base material for exterior parts of timepiece) is fluorinated by heating it in a fluorogas atmosphere at 250 to 600°C, preferably 300 to 500°C.

Please replace the paragraph beginning at page 50, line 12, with the following rewritten paragraph:

C45 The base materials for band pieces and connecting parts thereof, or other exterior parts of the timepiece, after the above gas carburizing, are pickled in the same manner as described hereinbefore with respect to the decorative item of the present invention and the process for producing the same. For example, the base materials for band pieces and connecting parts thereof, or other exterior parts of the timepiece are immersed in an acid solution.

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

Please replace the paragraph beginning at page 54, line 22, with the following rewritten paragraph:

C55 - Another form of exterior part of timepiece according to the present invention comprises a metal, this metal having at its surface a deformed layer containing a fibrous structure wherein metal crystal grains are deformed so as to be fibrous, at least the deformed layer having a hardened layer wherein a solute atom is diffused so as to form a solid solution.

Please replace the paragraph beginning at page 60, line 18, with the following rewritten paragraph:

C56 - In the present invention, for example, when a carburized layer as the hardened layer is formed on the surface of the deformed layer obtained in the above manner in the basis material for an exterior part of the timepiece, constituted of austenitic stainless steel containing no titanium metals, an exterior part of the timepiece is preferably produced through the following process.

Please replace the paragraph beginning at page 69, line 13, with the following rewritten paragraph:

C57 - Another form of the exterior part of the timepiece according to the present invention comprises a metal as a base material therefor, the metal having at its surface a deformed layer containing a fibrous structure wherein metal crystal grains are deformed so as to be fibrous, at least the deformed layer having a hardened layer wherein a solute atom is diffused so as to form a solid solution. By virtue of this structure, the exterior part of the timepiece has a smooth or specular surface free of "orange peel" and is thus excellent in appearance.

Please replace the paragraph beginning at page 95, line 1, with the following rewritten paragraph:

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

C58
The first hard coating was formed on part of the surface of band pieces furnished with carburized layers in the same manner as in Example A1. Further, the second hard coating with tone different from that of the first hard coating was formed on the other part of the surface of band pieces.

Please replace the paragraph beginning at page 98, line 7, with the following rewritten paragraph:

C59
The fluorogas was discharged from the muffle furnace. While blowing a carburizing gas (mixed gas consisting of 10% by volume of CO, 20% by volume of H₂, 1% by volume of CO₂ and 69% by volume of N₂), the wristwatch bands were held in the muffle furnace at 480°C for 12 hr, thereby carburizing the wristwatch bands. The wristwatch bands were taken out removed from the muffle furnace.

Please replace the paragraph beginning at page 100, line 6, with the following rewritten paragraph:

C60
The connecting parts were also carburized so that a hard carburized layer was formed in a region of each of the connecting parts extending from the surface thereof to a depth of tens of microns (μm). As a result, the hardness of the connecting parts was increased, so that bending or breakage of connecting pins and length regulation pins was seldom rare, even when the wristwatch band was stretched along the length thereof.

Please replace the paragraph beginning at page 104, line 3, with the following rewritten paragraph:

C61
The fluorogas was discharged from the muffle furnace. While blowing a carburizing gas (mixed gas consisting of 10% by volume of CO, 20% by volume of H₂, 1% by volume of CO₂ and 69% by volume of N₂), the wristwatch bands were held in the muffle furnace

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

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at 480°C for 12 hr, thereby carburizing the wristwatch bands. The wristwatch bands were taken out removed from the muffle furnace.

Please replace the paragraph beginning at page 107, line 15, with the following rewritten paragraph:

C62
The fluorogas was discharged from the muffle furnace. While blowing a carburizing gas (mixed gas consisting of 10% by volume of CO, 20% by volume of H₂, 1% by volume of CO₂ and 69% by volume of N₂), the wristwatch bands were held in the muffle furnace at 480°C for 12 hr, thereby carburizing the wristwatch bands. The wristwatch bands were taken out removed from the muffle furnace.

Please replace the paragraph beginning at page 110, line 9, with the following rewritten paragraph:

C63
The fluorogas was discharged from the muffle furnace. While blowing a carburizing gas (mixed gas consisting of 10% by volume of CO, 20% by volume of H₂, 1% by volume of CO₂ and 69% by volume of N₂), the wristwatch bands were held in the muffle furnace at 480°C for 12 hr, thereby carburizing the wristwatch bands. The wristwatch bands were taken out removed from the muffle furnace.

Please replace the paragraph beginning at page 113, line 11, with the following rewritten paragraph:

C64
The fluorogas was discharged from the muffle furnace. While blowing a carburizing gas (mixed gas consisting of 10% by volume of CO, 20% by volume of H₂, 1% by volume of CO₂ and 69% by volume of N₂), the wristwatch bands were held in the muffle furnace at 480°C for 12 hr, thereby carburizing the wristwatch bands. The wristwatch bands were taken out removed from the muffle furnace.

Application No. 09/831,327
Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1775
Paper dated August 6, 2003
Reply to Office Action of April 9, 2003
Attorney Docket No. 1217-010737

Please replace the paragraph beginning at page 116, line 17, with the following rewritten paragraph:

C105 - The fluorogas was discharged from the muffle furnace. While blowing a carburizing gas (mixed gas consisting of 10% by volume of CO, 20% by volume of H₂, 1% by volume of CO₂ and 69% by volume of N₂), the wristwatch bands were held in the muffle furnace at 480°C for 12 hr, thereby carburizing the wristwatch bands. The wristwatch bands were taken out removed from the muffle furnace.

Please replace the paragraph beginning at page 120, line 1, with the following rewritten paragraph:

C106 - The fluorogas was discharged from the muffle furnace. While blowing a carburizing gas (mixed gas consisting of 10% by volume of CO, 20% by volume of H₂, 1% by volume of CO₂ and 69% by volume of N₂), the bezels were held in the muffle furnace at 480°C for 12 hr, thereby carburizing the bezels. The bezels were taken out removed from the muffle furnace.